LA-UR-14-28865
Approved for public release; distribution is unlimited.

Title: Impact of covered PBX-9502 with a 2-inch steel sphere: data summary

Author(s): Marr-Lyon, Mark

Intended for: Report

Issued: 2014-11-14

Los Alamos
NATIONAL LABORATORY
EST. 1943

Impact of covered PBX-9502 with a 2-inch steel sphere: data summary

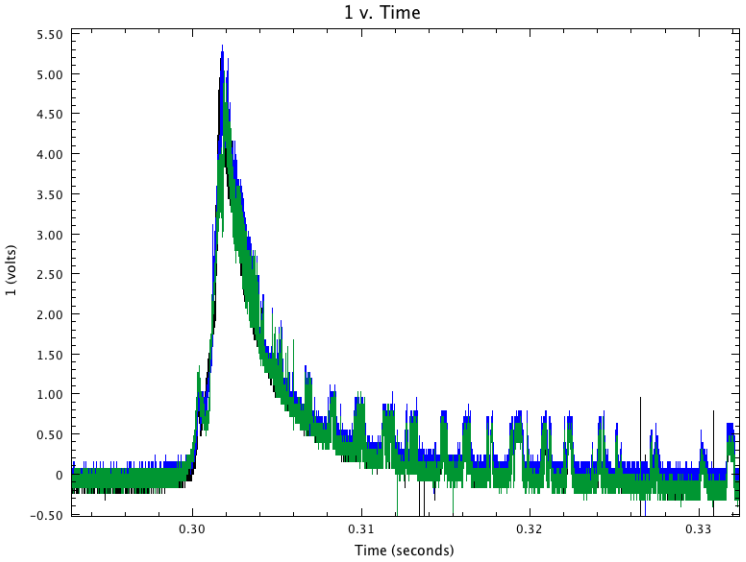
Mark Marr-Lyon

11/12/14

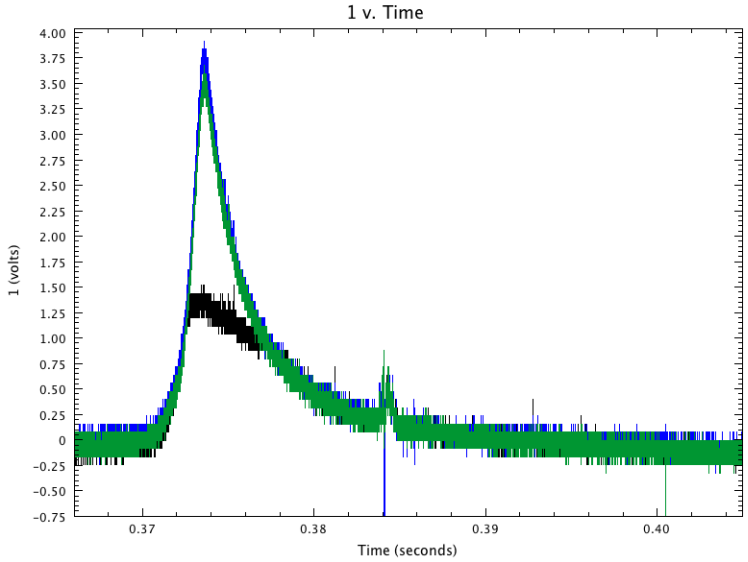
Overview

- Two shots were fired where a 2-inch diameter steel ball impacted a 1018-steel-cased cylinder of PBX-9502.
- PBX-9502 dimensions: 4.5” diameter x 4.5”
- 1/8”-thick 1018 steel cover plate
- 2” ball material: E52100 alloy steel
- The PBX-9502 did not detonate in either shot

Powder chamber pressure data

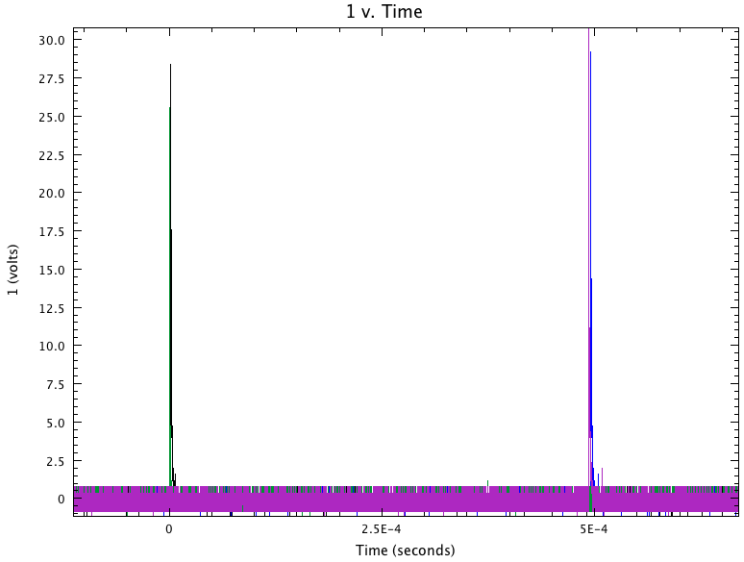


K12-22917
pMax = 72600 psi

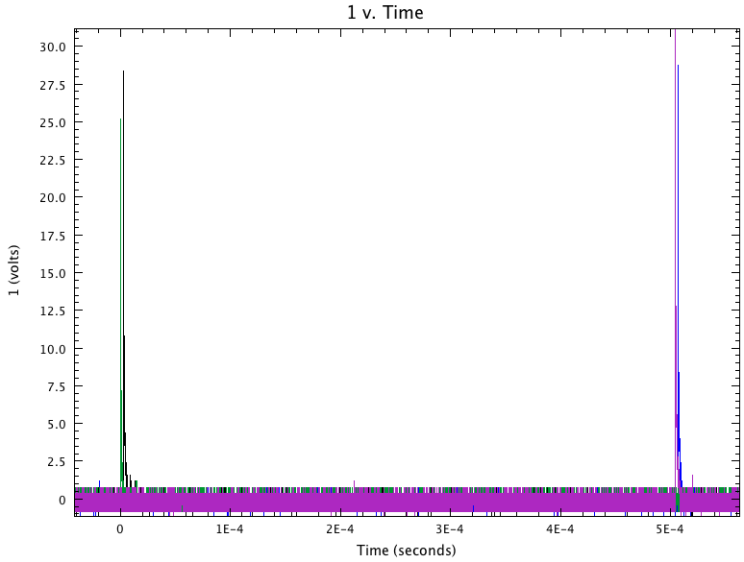


K12-22918
pMax = 53100 psi

Velocity screen data

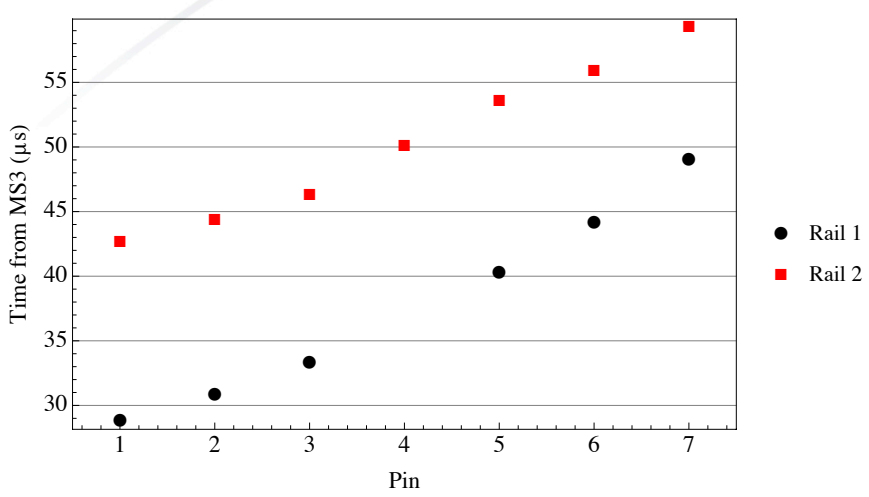


K12-22917
v = 1.85 km/s

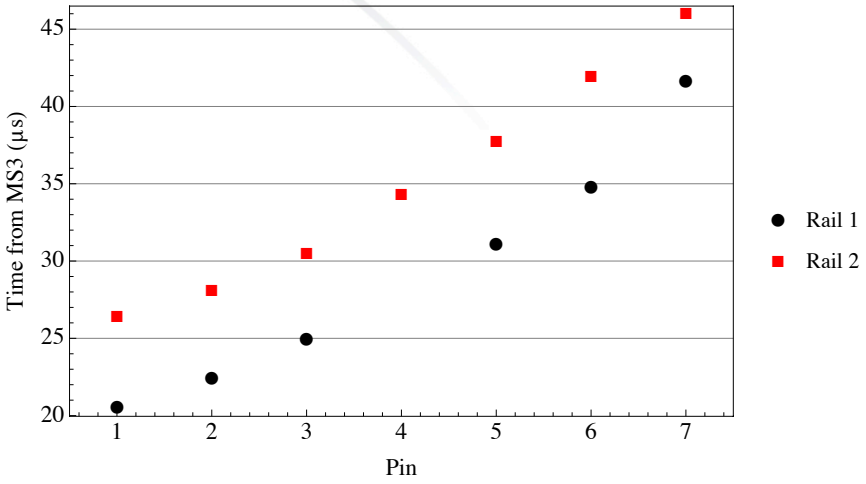


K12-22918
v = 1.81 km/s

Pin data

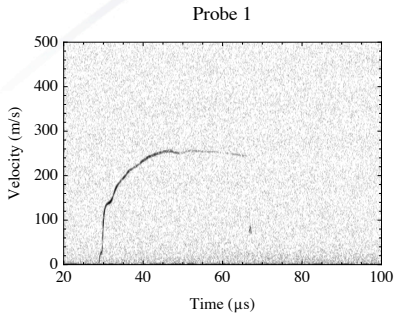


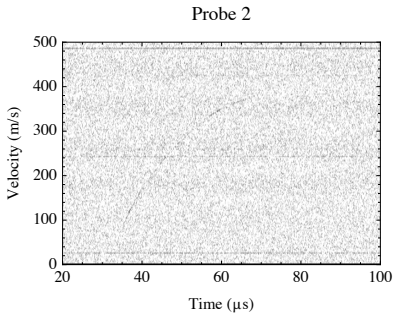
K12-22917

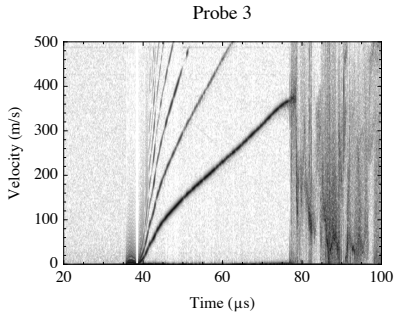


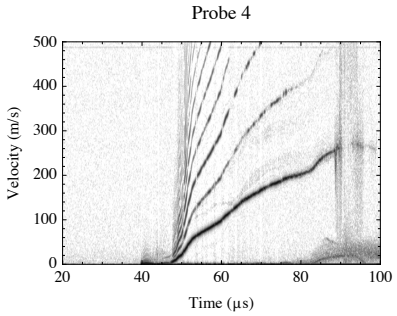
K12-22918

PDV data

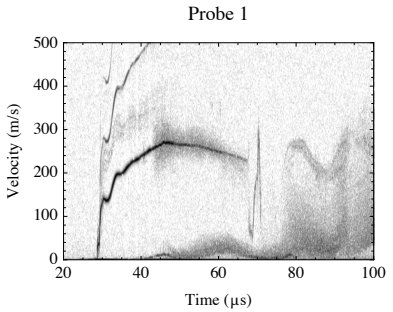


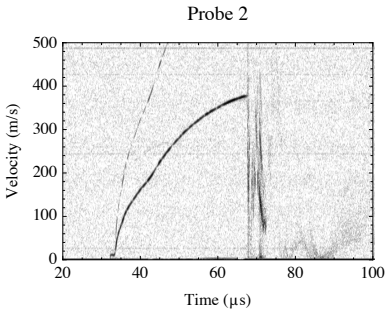


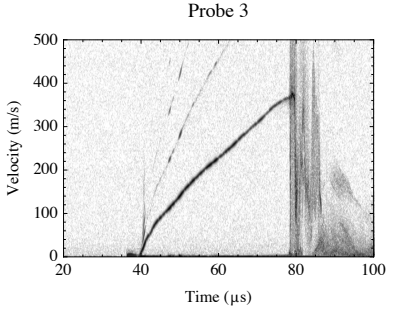


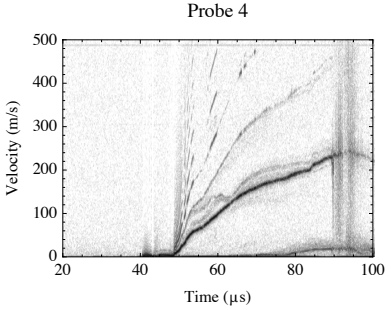


K12-22917



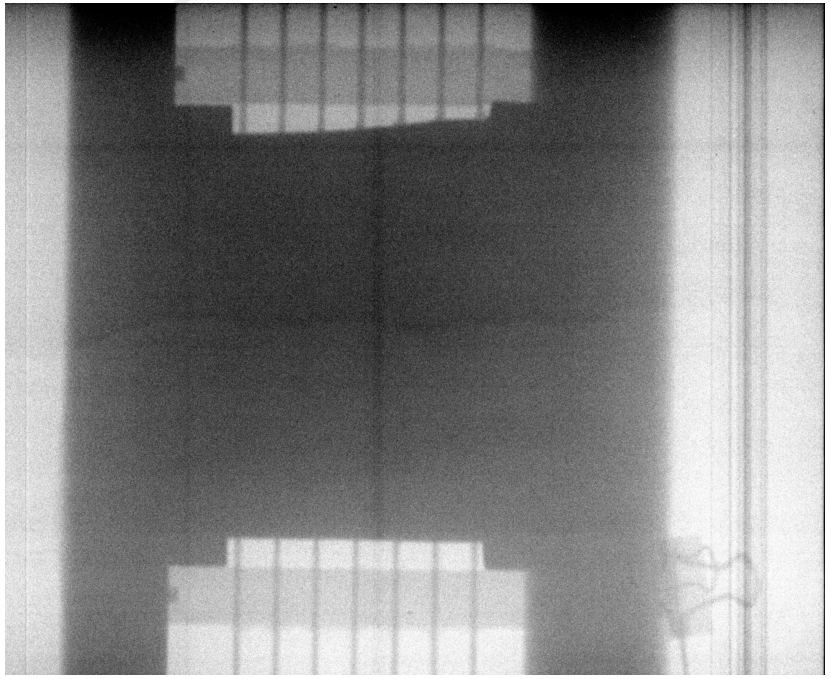




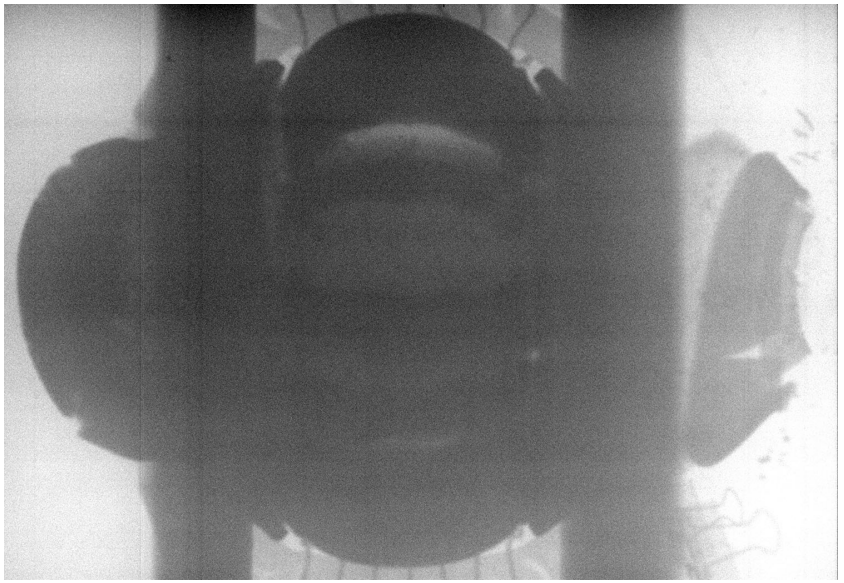


K12-22918

Radiographs

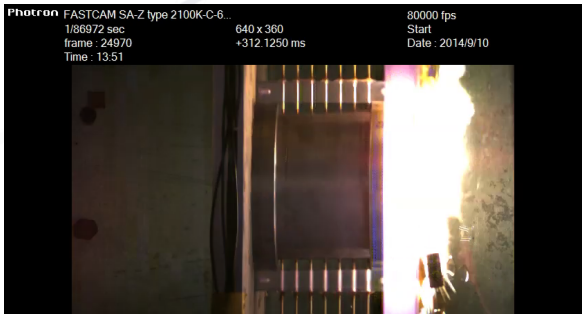


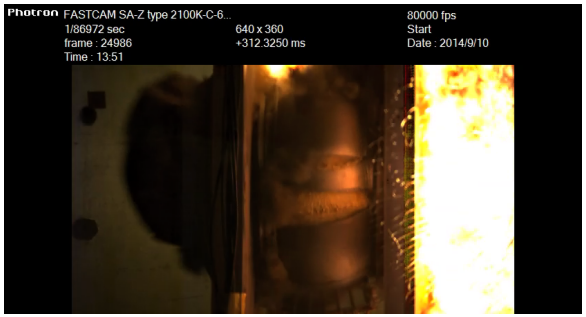
K12-22917
50 μs after MS3

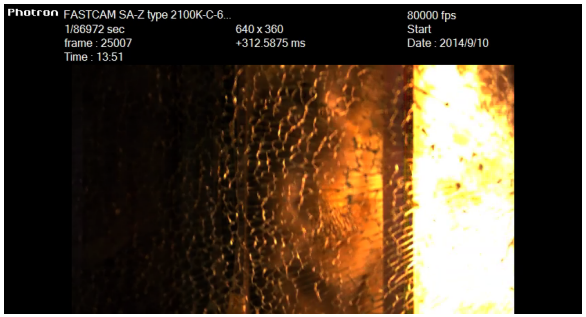


K12-22918
200 μs after MS3

Video frames from K12-22917







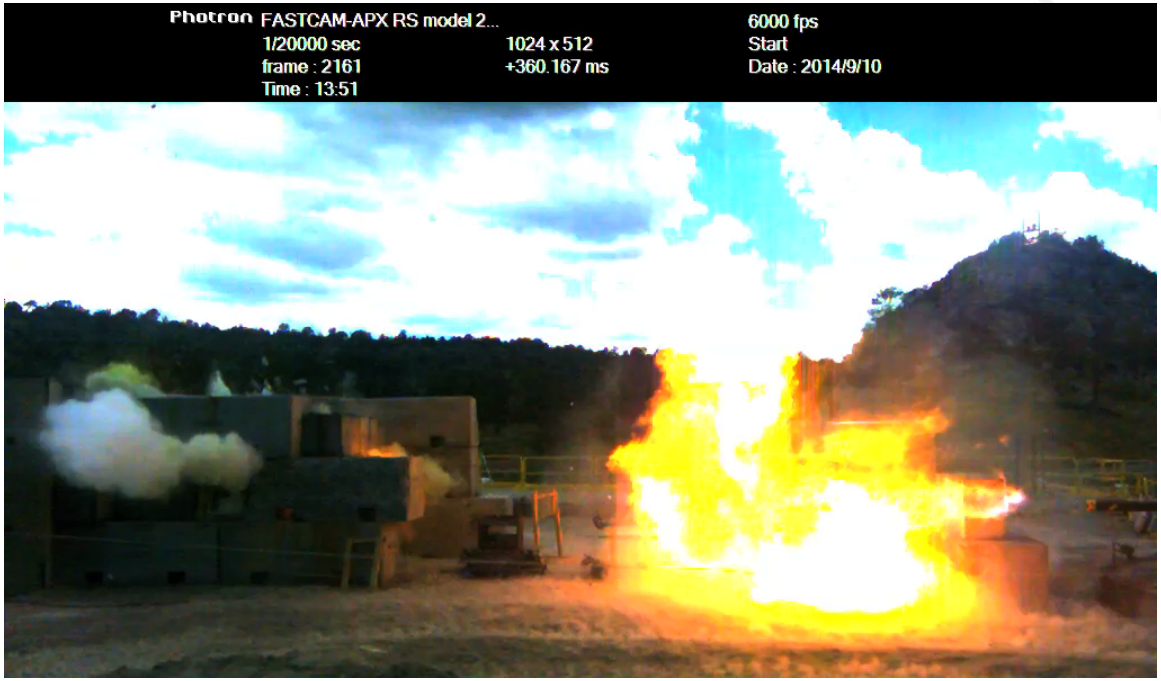
2-inch diameter steel ball
1.85 km/s

t=12.5 μs after impact

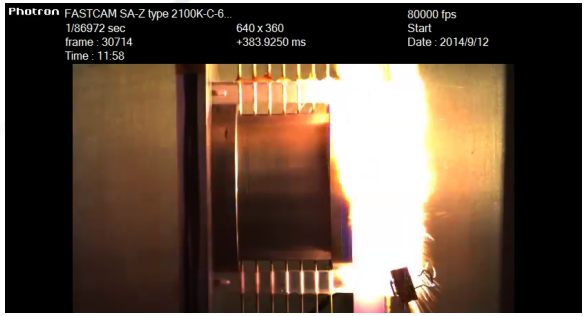
t=212.5 μs after impact

t=475.0 μs after impact

K12-22917 impact

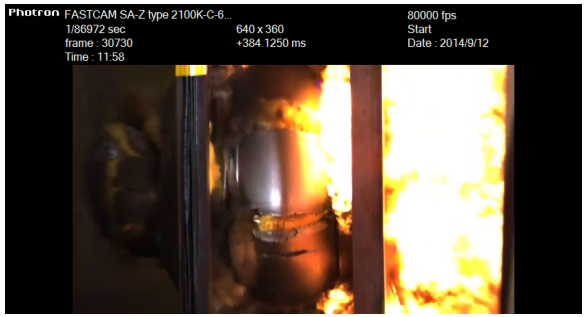


Video frames from K12-22918

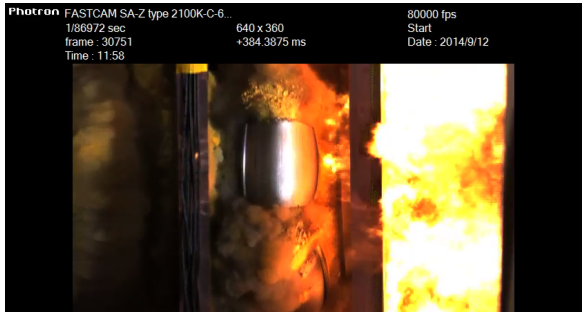


2-inch diameter steel ball
1.81 km/s

t=12.5 μs after impact



t=212.5 μs after impact



t=475.0 μs after impact

K12-22918 impact

K12-22917 photos







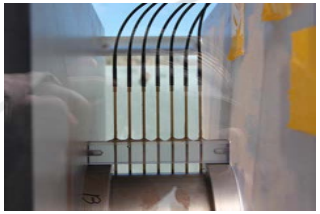









K12-22917 photos

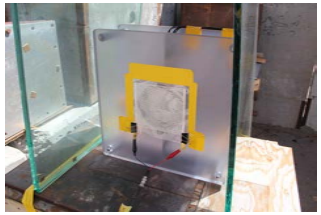
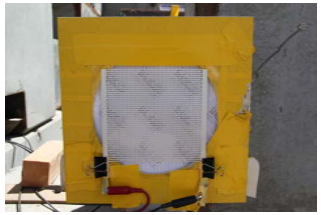










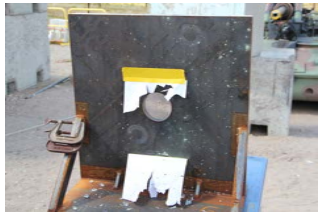





K12-22917 photos













K12-22917 photos
















K12-22917 photos

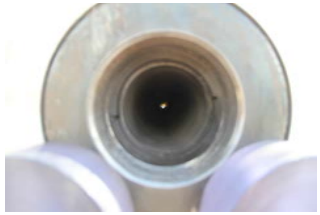










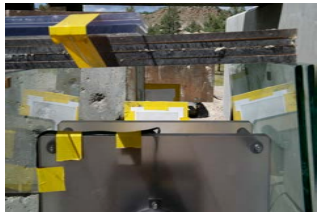


K12-22917 photos











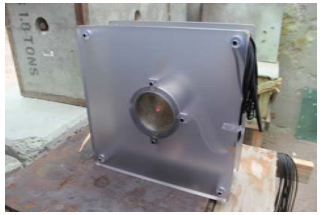

K12-22917 photos

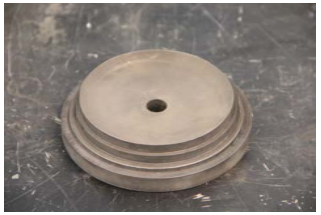
K12-22918 photos



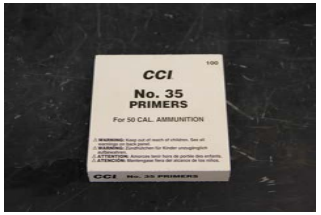




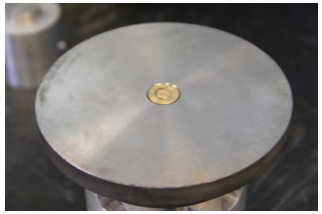



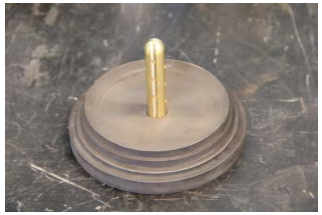
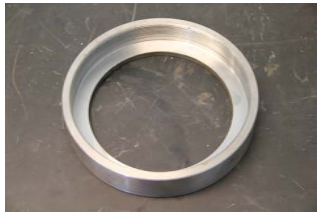


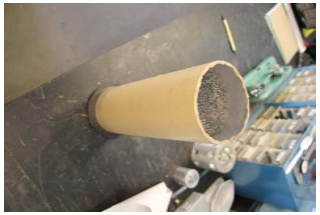


K12-22918 photos



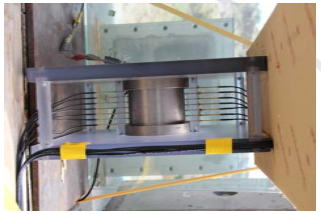








K12-22918 photos















K12-22918 photos
















K12-22918 photos